Faculty of Science and Information Technology Department of Textile Engineering

REPORT ON

Industrial Attachment
At
Hypoid Composite Knit Ltd.

Course Title: Industrial Attachment
Course Code: TE-410

Academic Supervisor:
Md. Mahfuzur Rahman
Senior Lecturer
Department of Textile Engineering Daffodil International University

Factory Supervisor:
Engr. S.M Sayeedur Rahman (Raju)
General Manager (Dyeing)
Hypoid Composite Knit Ltd.

Prepared By

Rana Modal
ID: 083-23-1111
Dipon Chakma
ID: 083-23-1158
Motakim Ahmed
ID: 081-23-774

JULY, 2012

Acknowledgement

The term “textile” derived from the Latin textiles and the French texere, meaning “to weave,” and it originally referred only to woven fabrics. It has, however come to include fabrics produced by other methods. Thus, threads, cords, ropes, braids, lace, embroidery, nets and fabrics made by weaving, knitting, bonding, felting, or tufting are textiles. Some definitions of the term textiles would also include those products obtained by the papermaking principle that have many of the properties associated with conventional fabrics. In addition to clothing and home furnishings, conveyor belts, tents, automobile tires, swimming pools, safety helmets and mine ventilators.

From fiber to fabric, Hypoid Composite Knit Ltd. Is truly integrated undertaking. The Hypoid composite Knit Ltd. has the capability to offer a complete product range for export textile markets. The goal of Hypoid Composite Knit Ltd. is to become the preferred partner for sourcing high quality fabrics and clothing from Bangladesh with highly advanced technology and an emphasis on developing local human resources. Hypoid Composite knit Ltd. Has the potential to make an important contribution to the nation’s growing readymade garments exports sector.

The rationale behind the existing structure and future expansion of Hypoid Composite Knit Ltd is to capture value-added at each stage of the textile manufacturing process. Despite knit Ltd. Has leveraged Bangladesh’s labor cost advantage and export competitiveness to the maximum.

Abstract

From fiber to fabric, **Hypoid Composite knit Ltd** is truly integrated undertaking. The Hypoid Composite Knit has the capability to offer a complete product range for the export textile market. Though it is a composite factory we are able to learn about the product process of knitting, dyeing, finishing and garments. We are able to learn about merchandising and function of a merchandiser. We are able to learn about dying process procedure, finishing procedure, and lap dip process. We are able to learn about the garment production process, ironing, folding of the garments, packaging process. We are able to learn about the quality, quality control process. We are able to learn how to control quality in every step in making a complete garment. We are able to learn fabric consumption, carton measurement etc. We are also known about the ETP plant and the necessity of the ETP plant for the environment. How is it works and which chemical is used in ETP plant and why it is necessary for a factory? Through this Industrial Training we are able to gather practical knowledge which will help us in our future life and which will be helpful our future career. We think this Industrial Training is a constant part for our academic stage and without this Industrial Training our academic study would be incomplete.

INTRODUCTION

Textile arts are those arts and crafts that are plant, animal, or synthetic fibers to construct particular and decorative objects. Textile have been a fundamental part of human life since the beginning of civilization, and the methods and material used to make them have expended enormously, while the functions of textile have remained same. The history of arts is also the history of international trade. Tyrian purple dye was an important trade good in the ancient Mediterranean. The Silk Road brought Chinese silk to India, Africa, and Europe. Tastes for imported luxury fabrics led to sumptuary laws during the middle ages and Renaissance. The industrial revolution was a revolution of textile technology: the cotton gin, the spinning jenny and the powered loom mechanized production and led to the Luddite rebellion.

From fiber to fabric, Hypoid Composite Knit Ltd is truly integrated undertaking. The Hypoid Composite Knit Ltd. Has a capability to offer a complete product range for the export textile market. The global of Hypoid Composite knit Ltd is to become the preferred partner for sourcing high quality fabric & clothing from Bangladesh with highly advanced technology and an emphasis on developing local human resource.

The relation behind the existing structure and future expansion of Hypoid Composite Knit Ltd. it is to capture value – added at each stage of the textile manufacturing process. Despite Bangladesh lack of indigenous cotton production capability, Hypoid Composite Knit ltd has leveraged Bangladesh's labor Cost advantage and export competitiveness to the maximum.

Chapter: 01

FACORY INFORMATION

About the Factory:

Hypoid Knit Composite Ltd. with address of 176, South Krisnspur, Rajashan, Savar, Dhaka, Bangladesh has incorporated as a private limited company in June 2006.
Hypoid Composite Knit ltd is 100% export oriented garment manufacturing industry. It has the facility of knitting, dying, Cutting, Sewing, Finishing. Ware housing and ETP etc. in one premises. **HYPOID** has 7 high temperature dyeing machine to use world class eco-friendly dye staff which is not hazards to kind and environment. Theist daily dyeing capacity is 5000 kegs. Its finishing unit has the capacity of 7000 kegs per day. Furthermore they have a permanent agreement with Rising Knit Textile ltd. Bloomingdale Ltd. Nd Crystal wears Ltd. For finishing in tube form if necessary.

FACTORY PROFILE:

HYPOID COMPOSITE KNITE LTD

(Manufacturer & Exporter Of Knit Product)

Factory Address: 176, South Krishnapur, Rajson,Savar ,Dhaka, Bangladesh

Tel: # 92-7713933, Fax: #7713899, E-mail # hypoidck@yahoo.com

Bank Information **:** South East Bank Ltd

Name & Address : Kawran Bazar Branch, Jamuna Bhaban

2, Kawran Bazar,Dhaka-1215,Bangladesh

SWIFT: SEBDBDDHKRN e-MAIL:

Sedbkh@gononet,com

A/C 001511100003467

Contact Person : Md. Idrish Miah,Director & Chief Executive Officer

Mobile No : 01711431932

: Mr.Monjur Ali, (Executive Director)

Mobile No : 01940641009

Membership : BGMEA Reg No : 4977

BKMEA Reg No : 979-A/2006

Complience	: Inditex. S.A (Zara)
WRAP	: Certified
Certified No	: # 10628
OEKO –TEX	: Standard
	: Test No .08.HBD.61520
Wall-mart	: E.aluted
Supplier ID	: 28084998
Gots	: Certified
	: Certified No # C813140 GOTS-01.2010
BSCI	: They have first that BSCI Audit
	DBID #20609

DYEING UNIT

HYPOID has 7 high temperature dyeing machine to use world class eco-friendly dye staff which is not hazards to kind and environment. Theist daily dyeing capacity is 5000 kegs. Its finishing unit has the capacity of 7000 kegs per day. Furthermore they have a permanent agreement with Rising Knit Textile ltd. Bloomingdale Ltd. ND Crystal wears Ltd. For finishing in tube form if necessary.

DYEING MACHINE

PROCESS	No Of Machine	Capacity (Kg)	Brand & Origin	Year Of Manufacturing
High Temperature	1	50	Tong Geng (Tai wan)	April, 2006
High Temperature	1	200	Tong Geng (Tai wan)	April, 2006
High Temperature	1	400	Tong Geng (Tai wan)	April, 2006
High Temperature	1	600	Tong Geng (Tai wan)	April, 2006
Normal High Temperature	1	200	Tong Geng (Tai wan)	April, 2006
Normal High Temperature	1	400	Tong Geng (Tai wan)	April, 2006
Normal High Temperature	1	800	Tong Geng (Tai wan)	April, 2006

DYEING MACHINE SAMPLE

NO OF MACHINE	CAPACITY (KG)	ORIGIN	Year Of Manufacturing
01	**30**	**Bangladesh**	**March, 2007**
01	**10**	**Bangladesh**	**March, 2007**
01	**20**	**Bangladesh**	**March, 2007**
01	**20**	**Bangladesh**	**March, 2007**

DYEING CAPACITY: 6000 KGS /day

FINISHING SECTION

ACC Rope Opening and Slitting Unit (Turkey) 1 Set------ April, 2006

ACC Stented (Open Width) With 2 Padder (Turky) 1 Set------ April, 2006

ACC Combined Compact - Sanford (Turkey) 1 Set----- April, 2006

Finishing Capacity : 7000 kgs/ day

Name	Brand	Origin	Capacity	Number of Machin	Year of Manufacturing
Gas Generator	Jakson Cummins	Indian	380 kva	2 pcs	April,2006
Compressor	Rollair-25	France	2003/H	2 pcs	April,2006

Boiler	Hurst	USA	6.2 Ton	1 pcs	April,2006
WTP	Bangladesh	Bangladesh	603/H	1 pcs	April,2006
ETP	Bangladesh	Bangladesh	503/H	1 pcs	April,2006
REB			150 kva 150 kv		April,2006
Desil Generator	Cummins	Indian	222 kva	1 pcs	April,2006

LABORATORY EQUIPMENTS

SDL Crock meter/Rubbing Fastness Tester (UK) 1 unit----------May,2006

SDL Rot awash Colorfastness Tester (UK) 1 unit----------May,2006

SDL ECO Infrared Rota dyer (UK) 1 unit----------May,2006

SDL Spectrophotometer (UK) 1 unit----------May,2006

SDL Color Matching Cabinet (UK) 1 unit----------May,2006

SDL Knit Shrinkage Tester (UK) 1 unit----------May,2006

Data Color (USA) 1 unit----------May,2006

QUALITY: SECTION

1. SDL (ATLAS) Washcator OM 71 CLS. (textile Testing Solution)(UK) -------- --- ---May, 2006
2. Dyer (ARCSTON) (UK) -------- --- --- May, 2006
3. Color Fastness(SDLATLAS M 228) Rota Wash(UK) -------- --- ---May, 2006
4. Rubbing Test (AATCC) CROCK METER(UK) -------- --- --May, 2006
5. Pilling TEST M/C -------- --- --- May, 2006
6. Laundering M/C (Wash Fastness Testing M/C) -------- --- ---May, 2006

KNITTING UNIT

Hypoid has 6 circular knitting machines for their sample and production programmed. They have permanent agreement with some knitting companies to support their knitting programmed.

TOTAL KNITTING CAPACITY: 2000 KG /day

KINDS OF FABRIC THEY CAN PRODUCE

MACHINE	M- QTY	FABRIC TYPES	Brand & Origin	Year Of Manufacturing
Single Jersey	03	Plain and drop needles, Lacast,Pique, Feeder stripes, All kinds of fabrics mentioned can be made in piece dyed yarn dyed with full feeder lycra option.	LKM (Taiwan)	April, 2006
Rib	03	Full needle rib , drop needle ribs, Double face rib , Flat lock rib , all kinds of fabrics mentioned can be made in piece dyed and yarn dyed with full feeder lycra option.	LKM (Taiwan)	April, 2006

GARMENTS UNIT

SAMPLE SECTION

Equipment's

4 Needle Flat Lock ---------- 02 Set

3 Needle Flat Lock ---------- 02 Set

4 Thread Over Lock ---------- 04 Set

Plain Machine ---------- 04 Set

Elastic Attaching Machine ---------- 01 Set

Cutting Table ---------- - 01 Set

CUTTING SECTON

Equipment's

Cutting Table ----- 02 pec

Cutting Machine ----- 04 pec

Bend Knife ----- 01 pec

Numbering Machine---- 01 pec

SEWING SECTION

Equipment's

Plain Machine ---------- ---- 107 Set

4 Thread Over lock Machine ---------- 60 Set

3 Needle Flat Lock machine ---------- 36 set

4 Needle Flat Lock machine ---------- 05 set

Auto Controlled 1- Needle Lock Stitch ---------- 02 set

Elastic Attaching Machine ---------- 01 set

Button Hole Machine ---------- 04 set

Bar Tuck Machine ---------- 02 set

2 Thread over Edger for butt added sewing ---------- 02 set

Kansi Special ---------- 07 set

Dino Automatic RIB Cutter ---------- 01 set

UZU Thread Sucking Machine ---------- 01 set

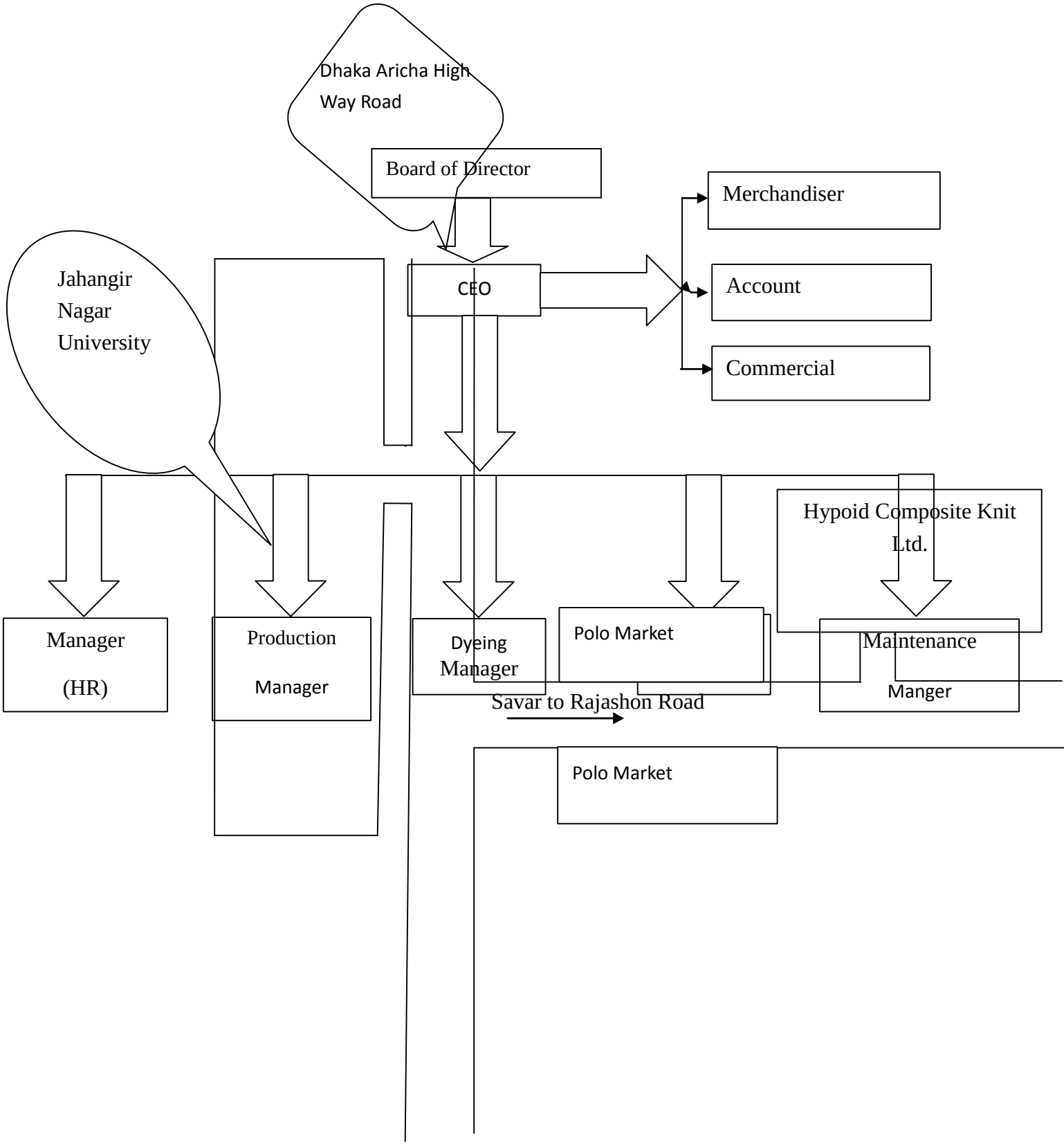
Oshima Needle Detector ---------- 01set

Oshima Fabric Inspection ---------- 01 set

Heat Transfer Label attaching ---------- 03 set

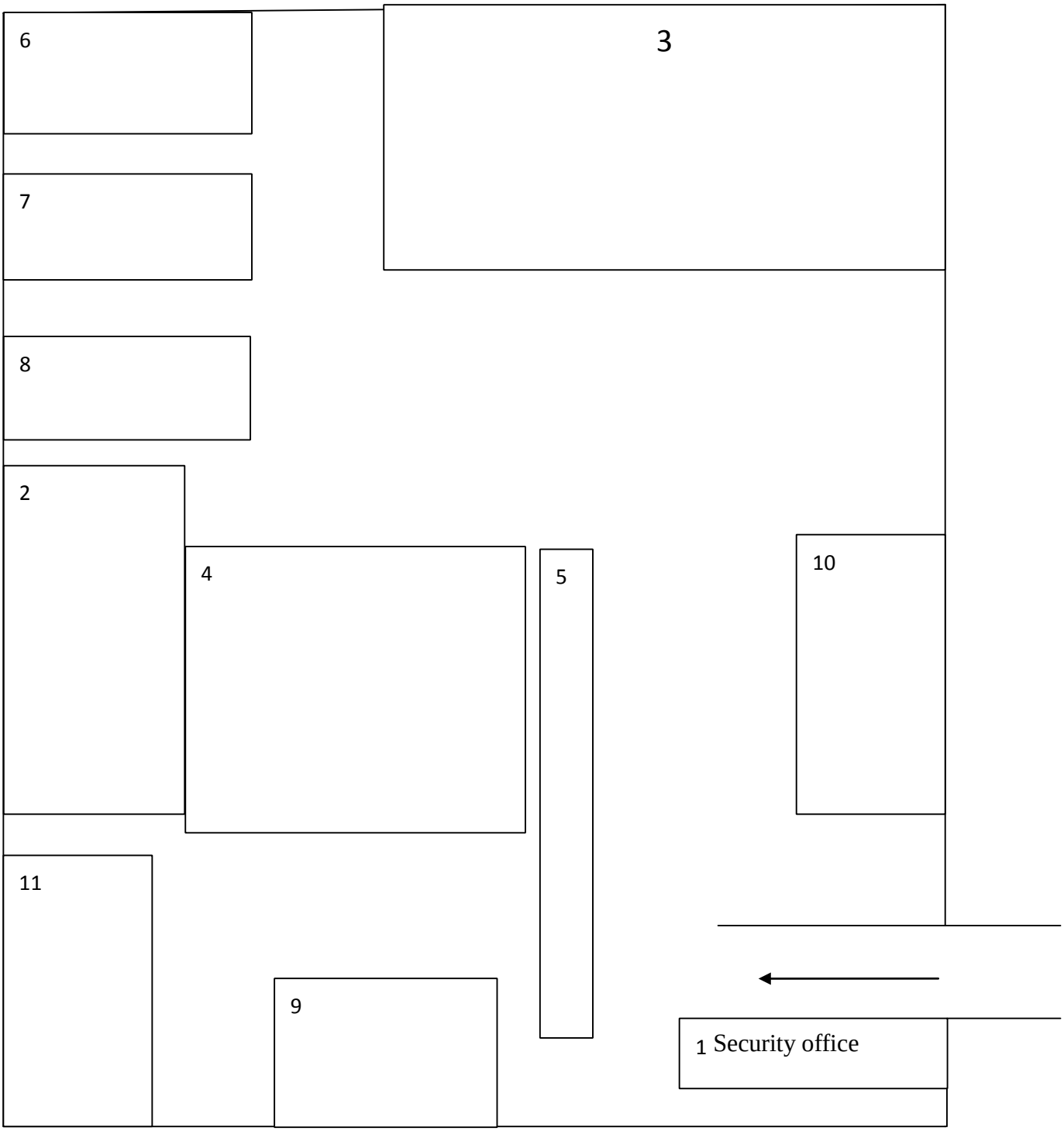
Snap Button Attaching ---------- 04 set

Viet Steam Iron ---------- 15 set



Factory Location Map:

Basic lay out of The Factory:



1. Security office
2. Knitting section
3. Dyeing Section
4. Garment Section
5. Store
6. ETP Plant 7. Boiler

8. Generator
9. Generator
10. Compliance section
11. Canteen & Dining Room

Valuable Buyer:

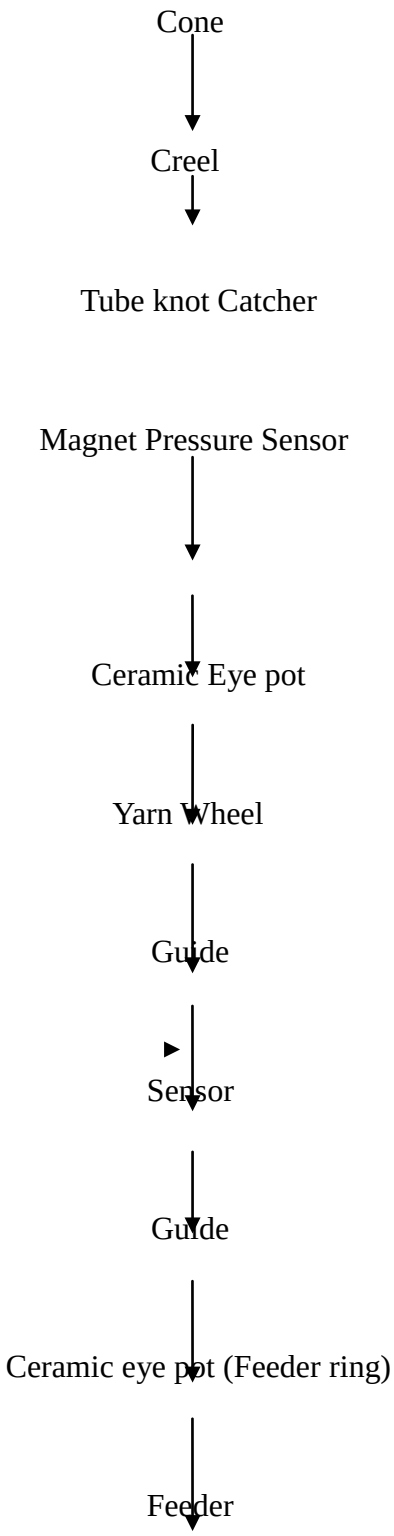
- JC Penny
- Wall mart
- Sears
- Index S.A (Zara)
- Kik
- Peter Werth Gor Factory
- Puig Jarner
- MJC
- BJD Inc

Figure: Front View of Hypoid Composite Knit Ltd.

CHAPTER: 02
KNITTING SECTION

Figure: lay Out of Knitting Section

Main Component of Circular knitting Machine:



Output of Circular knitting Machine:

Single Jersey Machine:

- S/J plain
- Single lactose
- Double lactose
- Single pique
- Double pique
- Mini Jacard
- Terry

Inter Lock machine:

- Inter lock pique
- Eyelet fabric
- Mash fabric
- Honey comb fabric
- Face/Back fabric Rib Machine:

- 1x1 rib
- 2x2 rib
- Separation fabric
- Honey comb

Machine Description:

Machine No: 1, 2 & 3 (Rib Machine) Technical Data:

Machine Diameter: 30

Machine Gauge: 18

No of Feeders: 60

No of Cam: 61

Production Range:

- Rib

- Interlock
- Ottoman
- Thermal drop

Origin: Made in Taiwan

Brand Name: LKM

Machine No: 4, 5 & 6 Jersey machine:

Machine Diameter: 30

Machine Gauge: 24

No of Feeders: 90

No of Cam: 30

Production Range:

- Plain & Drop Needle
- Lactose ➢ Pique
- Feeder stripes.

Origin **:** Made in Taiwan

Brand name **:** LKM

Considerable point to produce knitted fabric

When a buyer for fabric them they mention some related to produce and quality before production of knitted these are needed to consider those are follows

- Type of fabric or design of fabric
- finished GSM
- Yarn count
- Type of yarn
- diameter

- color
- stitch length

Methods of increasing production :

1. By increasing machine speed:

Higher the machine speed faster the movement of needle and ultimately production will be increase but it has sure that excess tension is not imposed yarn because of this speed.

2. By increasing the number of feeder:

If the of feeder is increased in the circumference of cylinder, then the number of courses will be one revolution at a time .

3. By using machine of higher gauge:

The more the machine gauge the more the production is so by using marching of higher gauge production can be increased.

3. By imposing other developments:

The more the machine gauge, the more the production is. So by using machine of higher gauge production can be increased.

Some points are needed to maintain for high quality fabric :

A. Brought good quality yarn.
B. Machine are oiled and grassed accordingly.
C. G.S.M stitch length. Tension is controlled.
D. Machines are cleared every shift and servicing is done after a month.
E. Grey fabric is checked by 4 point grading system.

Raw materials for knitting:

Type of yarn	Count
Cotton	**24s, 26s, 28s, 32s, 34s, 40s.**
Polyester	**75, 72D, 100D.**
Spandex yarn	**20D, 40D, 70D.**
Grey mélange	**24s, 26s.**
PC(65%polyester)	**24s, 26s, 30s.**
CVC	**24s, 26s, 30s**

Changing of GSM:

A. Major control by VDQ pulley

B. Minor control by stitch length adjustment.

C. Altering the position of the positive direction then the G.S.M of the fabric. If pulley movies towards the positive direction then the G.S.M. is decrease. And in the reverse direction G.S.M. will increase.

Production parameter:

I. Machine diameter
II. machine rpm
III. Number of feed or feeder in use
IV. Machine gauge V. Count of yarn
VI. Required'

Relationship between knitting parameter:

I. Stitch length increase with decrease of GSM II.
If stitch length increase then fabric width increase.
III. If machine gauge then fabric decreases
IV. If yarn count increase then fabric width increases V.
For finer gauge, finer count than should use .

Production calculation:

A. Production /shift in kg 100%efficiency:

$$= \frac{\text{RPM x no. of feeder x no. of needle x SL (mm)}}{\text{3527.80 X Yarn count}}$$

B. production / shift in meter:

$$= \frac{\text{Course / min}}{\text{Course / cm}}$$

$$= \frac{\text{RPM x no .of feeder x 60 x 12 x Efficiency}}{\text{Course/cm x 100}}$$

C. Fabric width in meter:

$$= \frac{\text{Total /no of wales}}{\text{Wales /cm x 100}}$$

$$= \frac{\text{Total no of needle used in knitting}}{\text{Wales /cm x 100}}$$

Effect stitch length on color depth:

If the depth of color of the fabric is high loop length should higher because case of fabric with higher loop is less in dark shade dye up% is higher.

Factor that should be Changer in case fabric design on quality change :

A. Cam
B. set of needle
C. Size of loop shape

Figure: **Single Jersey Machine**

Figure: Rib Machine

Chapter-03

LAP DIP

LAP DIP DEVELOPMENT

Lap dips Development:

Lab dip development means the sample which is dyed accounting to buyer's requirement. Depending on dip developing sample dyed and bulk production is dyeing planning done.

Objectives of Lab Dip:

The main objective of lab is as follows.....

- To calculate the recipe sample
- to compare dyed sample with swatch by light box
- To calculate recipe for sample dyeing
- Finally approved lap Dip

DAVELOPMENT OF LAB DIP IN HYPOID:

Receiving standard swatch

⇩

Shade matching by light

⇩

Preparing recipe for dyeing

⇩

pipetting dyeing

⇩

Pot dyeing

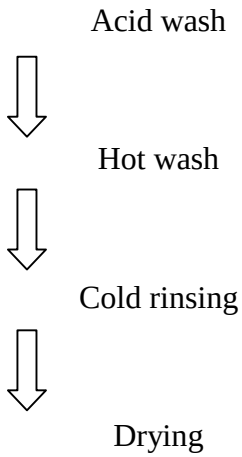
⇩

Unload

⇩

Normal wash

⇩



Preparation and Strong of Stock Dyes and Chemicals

Preparation of concentration of stock dye solution:

Normal 0.1% , 0.5 %, 1% , 1.5% ,2% and 4% stock solution of dyes are prepared lab for daily used

Preparation of concentration of stock Chemical solution:

Normal 25% salt and 25% soda stock solution of dyes are prepared lab for daily used

Dyes and chemical Measuring formula for laboratory:

The amount of dye solution (ml) is calculated as follows:

$$\text{Amount of dye solution (ml)} = \frac{\text{Fabric weight x Shade\%}}{\text{Concentration of stock dye solution}}$$

Example:

In recipe, Fabric wt. =5 gm.

Shade = 2%

[If used 0.5% stock solution of dye] then.

$$\text{Amount of dye solution (ml)} = \frac{5\times2}{0.5} = 20 \text{ ml}$$

The amount of chemical solution (ml) is calculated as follows:

$$\text{Amount of dye solution (ml)} = \frac{\text{Fabric wt x M: L x g/l}}{\text{1000x cone of stock solution}}$$

Example:

In recipe, Fabric wt. = 5 gm.

Salt = 20 g/l.

M:L = 1: 10

[If used 25% stock solution of Salt] then,

$$\text{Amount of dye solution (ml)} = \frac{5\times10\times20}{\times 0.25} = 4 \text{ ml}$$

Machineries used for lab dip in Hypoid:

Machine no. : 01

Name of machine : Lab dyeing machine

Company : Xiamen Rapid Company Ltd.

Model : H-24SF

Origin : China

Machine no. : 02

Name of machine : Lab dyeing machine

Brand : SDLATAS

Origin : UK

Machine no. : 03

Name of machine : Light box

Brand : VERIVIDE **Type**

of light : 5 types

- TL83
- TL84
- D65
- Florescent
- UV

Machine no. : 04

Name of machine : Data color machine

Brand : SAV

Origin : USA

Machine no. : 05

Name of machine : Wash Cater

Brand : SDLAATLAS

Capacity : 5kg

Origin : US

Machine no. : 06

Name of machine : Washing Machine

Brand : LG

Capacity : 5kg

Origin : Malaysia

Machine no. : 07

Name of machine : Rota Wash Machine

Brand : SDLATLAS

Capacity : 5kg

Origin : UK

Machine no. : 08

Name of machine : Tumble drying Machine

Brand : Ariston

Capacity : 5kg

Origin : China

Machine no. : 09

Name of machine : Crock meter

Brand : M-238 AA

Origin : Korea

Stock Solution Preparation

Shade %	Stock solution
.0001-0.0099	.01%
.01-.09	.01
.10-.99	.5%
1.0-2.0	1%
2.0	2%

Stock solution for salt and soda:

Shade %	Salt	Soda
.0001-.10	16	4
.10-.50	20	5
.50-1.0	30	8
1.0-2.0	40	10
2.0-3.0	50	12
3.0-4.0	60	15
4.0-5.0	70	18
5.0-Above	80	20

Procedure of Lap Dip

For 100% cotton fabric:

- Fabric weight measured by Electric balance
- Calculate the recipe
- Keep the fabric in the pot
- Start the program for dyeing
- The dyeing time the and temperature depended on type of dyes being used
- Acid wash for neutralization
- Cold wash them dyeing the lap and compare with the standard sample

Figure: Lab Dyeing Machine

Figure: Lab Dyeing Machine

Figure: VERTIVIDER Light Box.

Figure: SAV DATA Color Machine.

Figure: Wash cater machine

Figure: Rota wash machine

Chapter- 04

DYEING SECTION

DYEING SECTION

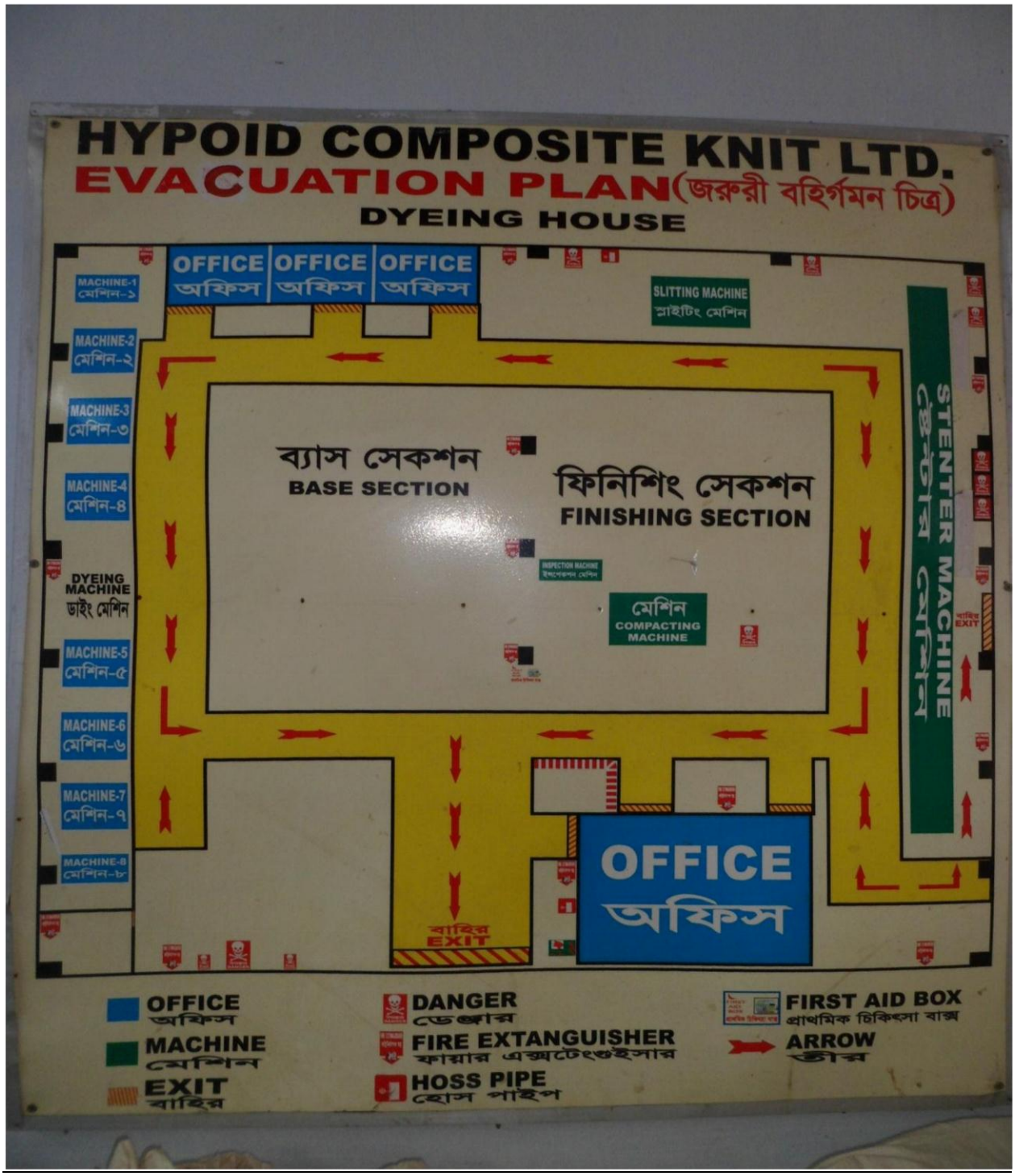
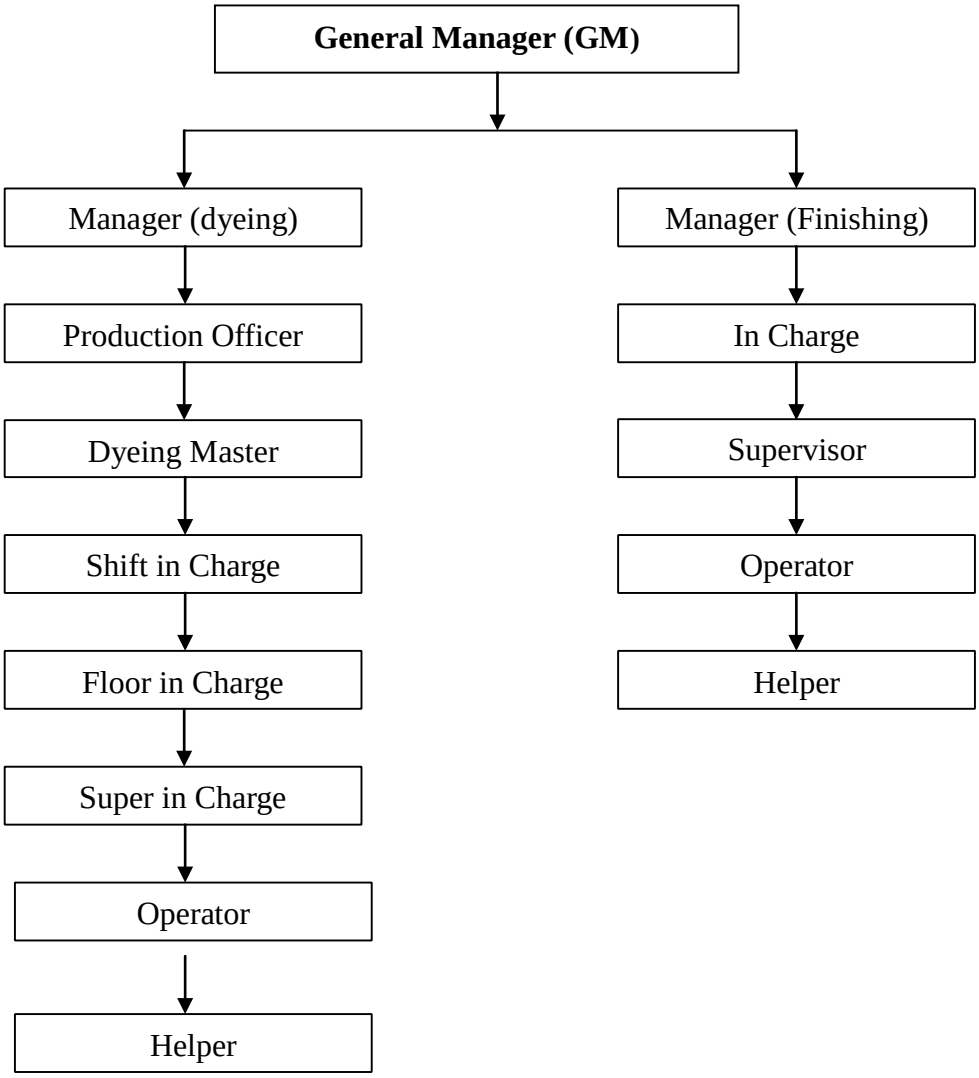


Figure: Layout of Dyeing And Finishing Section

Organogram of Dyeing and Finishing in Hypoid:



The raw materials used for production:

1. Grey Fabric
2. Dyes
3. Chemicals

Grey Fabric:

Following types of grey fabrics are dyed

- Single Jersey.
- Lycra Single jersey.
- Slab Single jersey.
- Interlock.
- Lacoste.
- Pique.
- Rib.
- Lycra Rib.
- 1×1 Rib
- 2×1 Rib
- 2×2 Rib & others

Sources:

The grey fabrics are produce from this industry. All the grey fabrics that are produce from this industry are dyed in dyeing section. After fulfill all order of this industry sometime they dyed fabric in sub contact.

Chemical Used In Hypoid Knit Composite:

Aids	Chemicals Name	Price (Tk/Kg)
General Chemicals	Caustic Soda	45
	Soda Ash Light	34
	H2O2	26
	Globes Salts	17
	Hydrose (BASF)	100
	Common Salt	12
	LASCOUR-717 (Detergent)	285
Acid	Acetic Acid	65
	Buper Acid	140
Softener	Liansoft-S 300 (Cationic Softener)	214
	Belsoft-200 (Non Ionic Softner)	202
	Lian Smith-2231 (Silicon)	324
	Power soft -180	380
	Resoft NS- (White Softner)	
	Resomine-3000 (Silicon)	
	Softner V-16	200
Anticrease	Leancrease-651	10
	Rybypon-173	91
Leveling Agent	Lianlevel723 (Cotton)	36
	Polyester leveling	250
	Rubygal CFTR	175

Sequestering	Brusquest -E	140
	Lianseq-710	140
	Kappa Quest -FE	160
Soaping agent	LASSOP	22
	Ruby soap-BIF	114
Brightener	Biltex ERH	450
	Texbrite 4-BK	350
Fixing Agent	Leanfix-706	220
Peroxide Killer	VEXPOK-100	22
Stabilizer	Peroxide Stabilized-SE	28
	Lian-PS-66	28
Others	Enzyme	304
	Bleaching	54
	Kappa Tex R98	380

Dyes Used In Hypoid knit Composite:

Brand Name	**Origin**	**Dyes Name**	**Price (kg/Tk)**
Remazol	**India**	Remazole red -RR	690.42
		Remazole Yellow -RR	692.00
		Remazole Blue-RR	840.00
		Remazole Brill Blue-R Special	1212.0
		Remazole turquoise Blue G	394.00
		Remazole Orange-RR	1034.0
Synozole	**Korea**	Synowhite 4BK 259.00	259.00
		Synozole Yellow K3RS	414.00
		Synozole Red K3BS	444.00
		Synozole Nave Blue KBF	548.00
		Synozole Blue KBR	1110.00
		Synozol Red-HB	533.00

		Synozol Yellow-HB	551.0
		Synozole Nevy Blue-HB	55.00

Dychufix	**China**	Dychufix Red 3BXF	236.00
		Dychufix Yellow 3RXF	251.00
		Dychufix Yellow 4 GL	418.00
		Dychufix Black BHC	304.00
		Dychufix Orange 2RXF	462.00
		Dychufix Black FWN	281.00
Disperse	**China**	Desperse Red -60 BFY	800.00
		Desperse Yellow-4G	380.00
		Desperse Blue 562 RL	675.00
		Desperse Blue 60 BGF	875.00
		Desperse navy Blue ECOG	400.00
		Desperse Black ECOG	400.00
		Dis- Orange –HF	700.00
		Dis- Red -HF	800.00
		Dis- Black-HF	850.00
		Dis Navy Blue HF	1100.0
		Dis- Blue- HF	1100.00
		Dis-Yellow-HF	7500.00
Corazole	**India**	Cor- Yellow RD	624.00
		Cor-Red RD	600.00
		Cor- Blue- RD	656.00
		Cor- Orange- RD	1000.00
		Cor- Traquise Blue –G	360.00
		Cor-Bri- Blue- R- Sp	1120.0
		Cor- Bri –Blue- BB	920.00
		Libafix-Amber CA	2450.0

Libafix	**Germany**	Libafix First Red CA	2250.0
		Libafix- Blue -CA	2500.0

Machineries Used In Hypoid Dyeing Floor:

Machine No. : 01

Name of m/c : Which dyeing machine.

Brand : Tong Geng

Origin : Taiwan.

Capacity : 50 Kg

Temperature : Up to 140°c

Machine no. : 02

Name of machine : Winch dyeing machine

Brand : Tong Geng

Origin : Taiwan

Capacity : 200kg

Temperature : Up to 140C

Machine no. : 03

Name of machine : Winch dyeing machine

Brand : Tong Geng

Origin : Taiwan

Capacity : 400kg

Temperature : Up to 140C

Machine no. : 04

Name of machine : Winch dyeing machine

Brand : Tong Gang

Origin : Taiwan

Capacity : 600kg

Temperature : Up to 140C

Machine no. **:** 05

Name of machine : Winch dyeing machine

Brand : Tong Gang

Origin : Taiwan

Capacity : 800kg

Temperature : Up to 140C

Machine no. : 06

Name of machine : Winch dyeing machine

Brand : Tong Geng

Origin : Taiwan

Capacity : 800kg

Temperature : Up to 98C

Machine no. : 07

Name of machine : Winch dyeing machine

Brand : Tong Gang
Origin : Taiwan

Capacity : 400kg

Temperature : Up to 98C

Machine no. : 08

Name of machine : Winch dyeing machine

Brand : Tong Gang

Origin : Taiwan

Capacity : 200kg

Temperature : Up to 98C

Machine no. : 09

Name of machine : slitting machine

Brand : ACC

Origin : turkey

Capacity : 8tons/day

Temperature : Up to 140C

54

Machine no. : 10

Name of machine : slitting machine

Brand : ACC **model**

: TPG 2400-6

Origin : turkey

Heater type : gas
No. of chamber : 06

Power : 152kw **Volt**

: 380 v.

Air pressure : 6 Atm

Heater pressure : 100 MBar

Capacity : 8 tons/day

Machine no. : 11

Name of machine : slitting machine

Brand : ACC **model**

: CCS- 2400

Origin : turkey

Heater type : steam

Volt : 380 v.

Air pressure : 6 Atm

Heater pressure : 4 MBar

Capacity : 8 tons/day

55

Machine no. : 12

Name of machine : Fabric inspection Machine

Brand : OSHIMA **model**

: CCS- 2400 **Origin** : Taiwan

Recipe For Machine Wash	
Detergent	0.5 gm/l
Caustic	1 gm/l
Hydrous	2 gm/l

Different Dyeing Parameter:

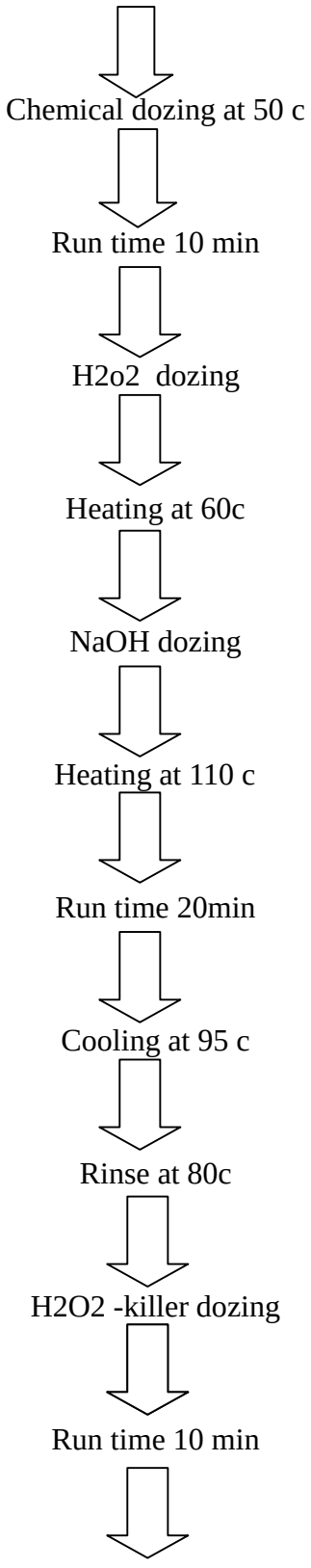
For PH	
During bleaching and scouring	11-23
During Enzyme treatment	4.5-5
Before addition of leveling agent	6-6.5
Before addition of color softener	6-6.5
Before addition of white softener	4.5-6
Softener at stenter machine	5.5-6
Silicon softener	5.5-6
Reactive dyeing	11-12

For temperature	
For cotton scouring	90-98 c
For cotton cold wash	60-70c
For cotton hot wash	80-90 c
For cotton acid wash	50-60 c
For cotton dyeing	80 c(for hot brand) & 60 c(for cold brand)

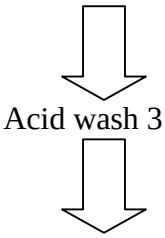
For time	
For scouring & bleaching	60-70 min
For reactive dyeing	60-80 min
For disperse dyeing	60-70 min

Process Flow chart of scouring and Bleaching

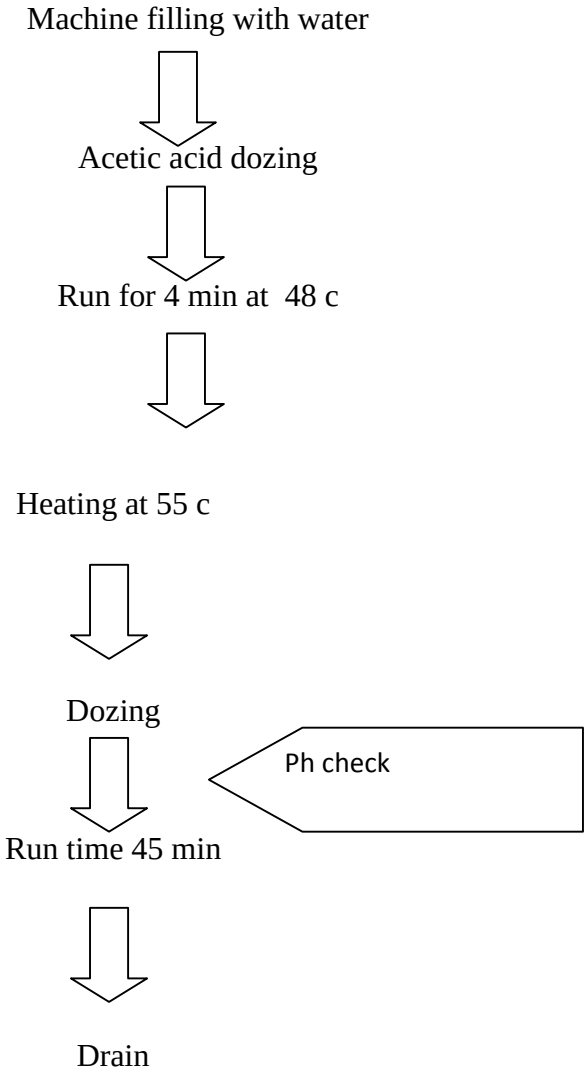
Machine filling with water



Cooling for 55 c

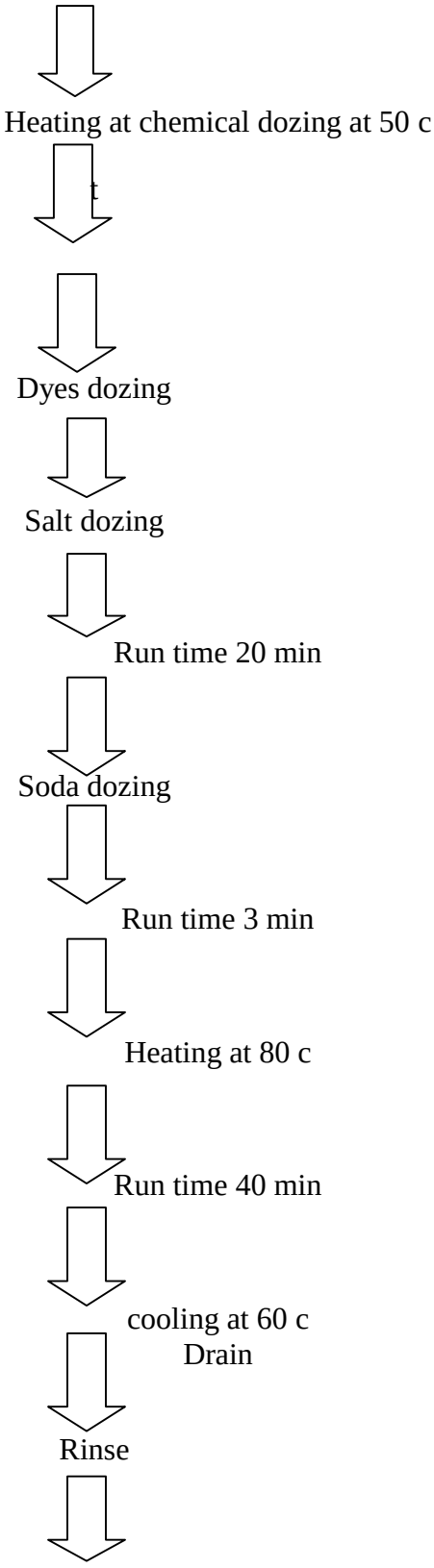


Process flow chart of Enzyme :

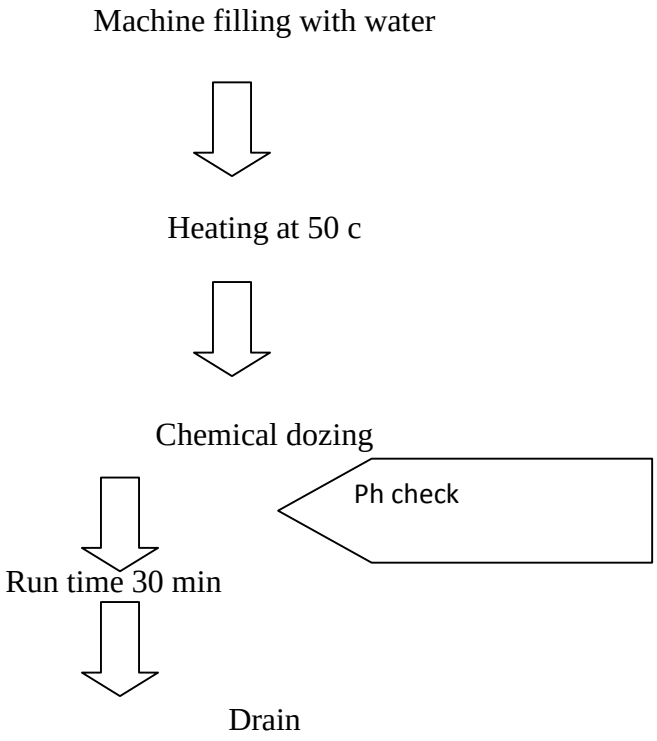


Process Flow chart of Turquoise Method:

Machine filling with water



Process Flow chart of softening:



Common Faults and their remedies:

01. Crease marks:

Crease:

I. Poor opening of the fabric rope

II. Incorrect process procedure

III. higher fabric **Remedies:**

I. Pre- Heating
II. Reduce the machine load
III. higher Liquor ratio
IV. Running at higher nozzle pressure calculation.

02. Fabric distortion:

Causes:

I. Too high materials II. Low liquor

Remedies:

I. By decreasing nozzle pressure
II. By decreasing speed
III.

03. Pilling:

Causes:

I. Higher speed during process
II. Too high mechanical stress on fabric surface

04. Excessive foaming:

I. pumping a mixture of & water

Remedies :

I. By using antifoaming agent

05. Uneven dyeing

Causes

I. Uneven pretreatment
II. Uneven heat -setting in case of synthetic fiber
III. Lack of control of dyeing machine

Remedies:

I. By ensuring_ pretreatment
II. By ensuring Uneven heat -setting in case of synthetic fiber

06. Shade variation (Batch & chemicals)

Causes

I. Incorrect use of dyeing & chemicals
II. Different Liquor ratio
III. Different Procedure

Remedies

I. Incorrect use of dyeing & chemicals
II. By using maintaining same Liquor ratio
III. By using same Procedure

07.Dye spot

Causes

I. Improper mixing of dye solution at wrong temperature

Remedies

I. proper use of solution at right temperature right ratio

Figure: Tumble drying Machine

Figure: Winch Dyeing Machine (1 nozzle)

Figure Winch Dyeing Machine (2 nozzles)

Figure: Winch Dyeing Machine (3 nozzle)

Figure: Winch Dyeing Machine (4 nozzle
Figure: Slitting Machine

Figure: Stenter Machine

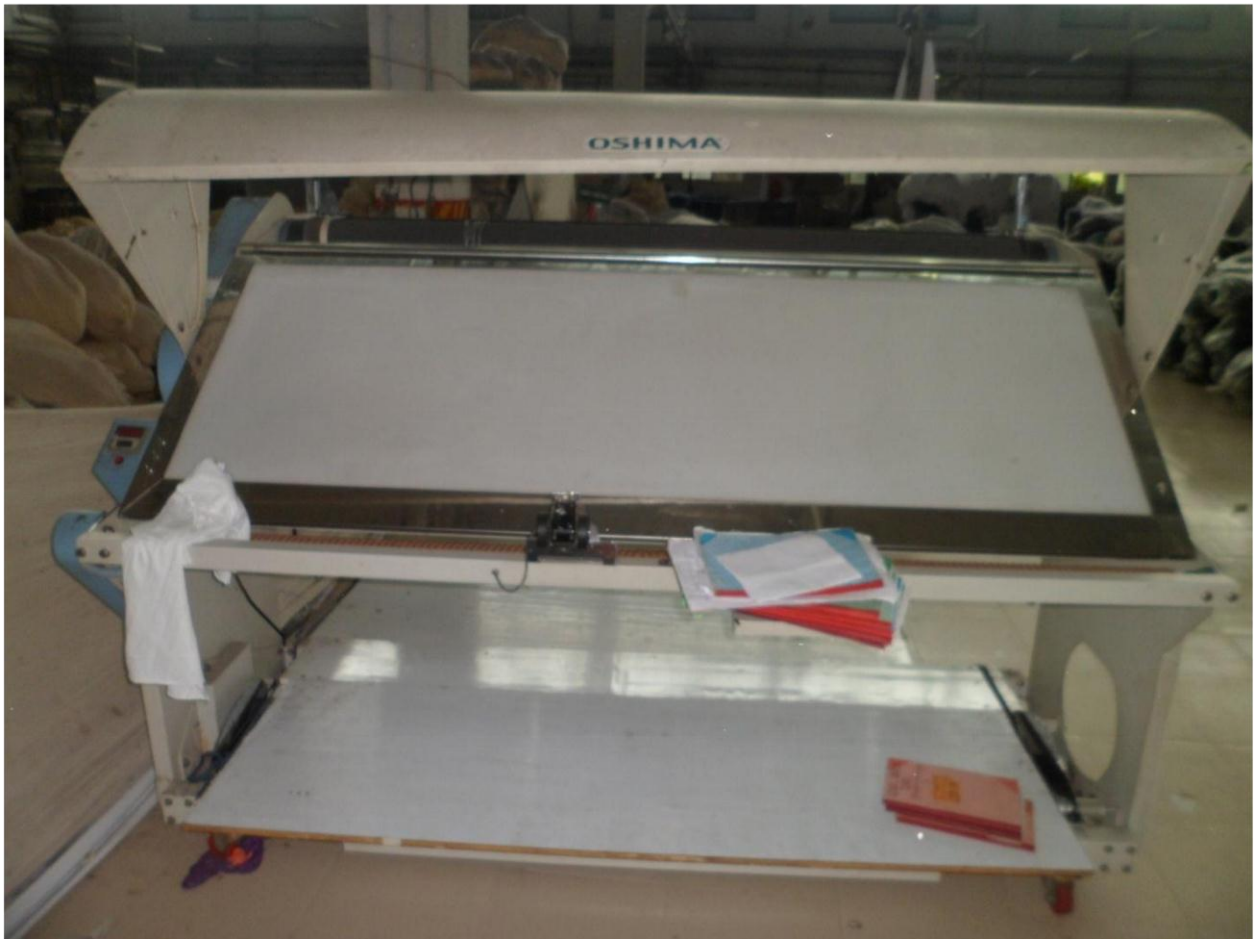


Figure: Fabric Inspection Machine

Chapter- 05

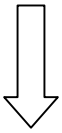
ETP PLANT

Effluent Treatment plant (ETP):

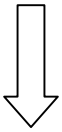
The effluent generated from different sector of a textile industry must be treated before are to the environment various chemical and physical means are introduce roe this purpose

Flow chart of ETP plant

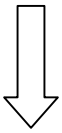
Waste water



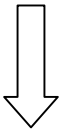
Collection tank/ Equalization



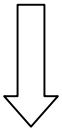
Pumping water



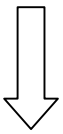
Flocculation

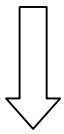


Secondary Clarifier

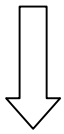


Pumping 72 Bio-tower tank

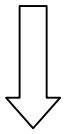




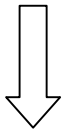
Aeration tank



Lamallah



Treatment tank



Dispose to environment

Product Quality Checked :

- Biological Oxygen Demand(BOD)
- Chemical Oxygen Demand(COD)
- color
- PH
- Total suspended etc.

Chemicals used in ETP:

- Lime
- polyester
- Ferrous -Sulphate-($FeSO_4$)
- Urea- Fertilizer

Lay out of ETP plant :

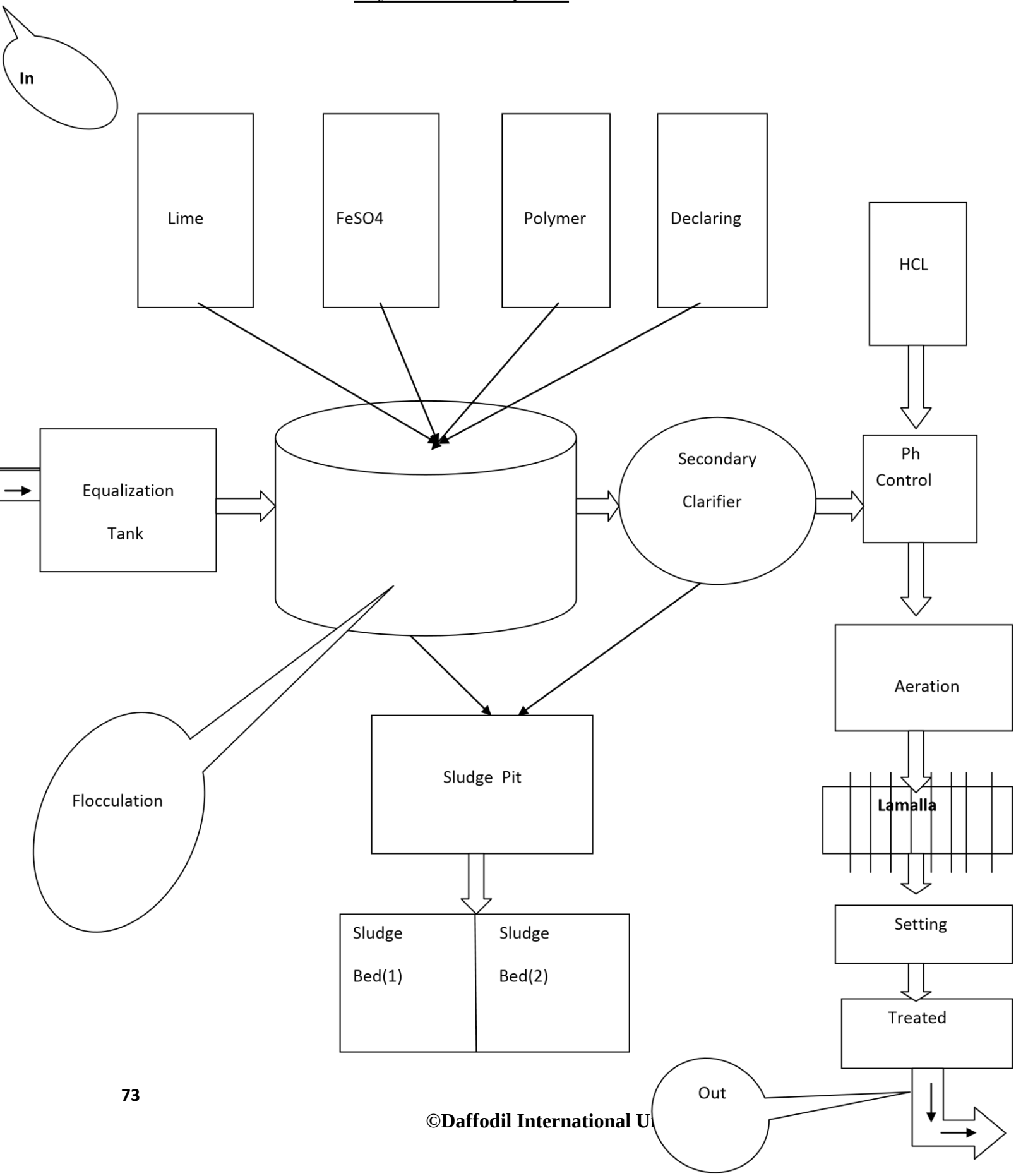


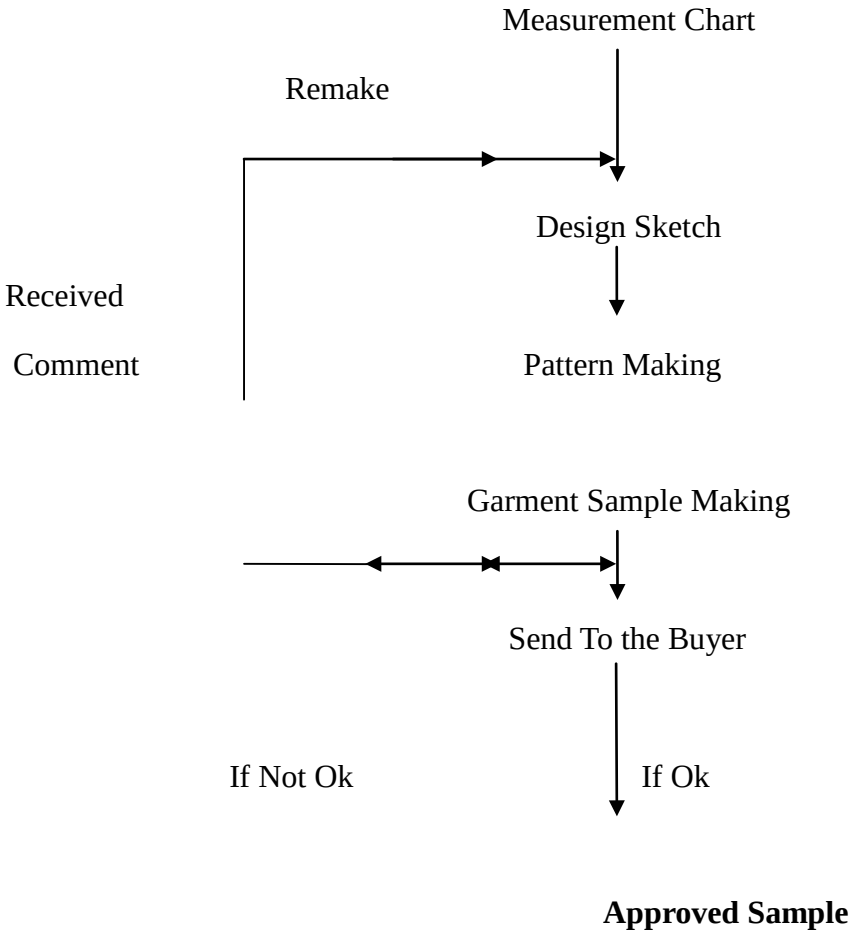
Figure: Equalization Tank

Figure: Aeration Tank

Chapter

GARMENT SECTION

Sample Development Process in Apparel Industry



Measurement Chart:

Measurement Chart is known as technical chart. A measurement chart is a detailed description of garments. It is also merchandising detailed sheet. By this sheet at first the sample of the garment is prepared then after approved the sample the bulk order is produced. In a product package the information for a garment can be achieve:

- Style no. of garments.
- Item no. of garments

- Design of garments.
- Measurement list of garments.
- Color of the garments.
- Size of the garments.
- Packing information of the garments.
- Folding instruction of the garments.
- Types of sewing thread used in different garments.
- Types of stitch used in the garments
- Types of trimmings & accessories used for the garments.
- Exact place of attaching the accessories.
- Instruction of care label.
- Types of fabric used.
- Consumption & Construction of the garments.

Types of Sample:

1. **Fit Sample:** The sample which is made by following only the measurement chart. Then the sample we gate is called fit sample.
2. **Photo type Sample:** Actual fabric and the accessories used to make this fabrics then it is send to the buyer. It is only one size Like "**M**".
3. **Size Set Sample:** When all size of sample are included in a set those sample is called is size set sample.

4. **Production Sample:** During production some of the sample garments collecting from the production line then send to the buyer these are called production sample.
5. **Shipping Sample:** After final inspection, when shipment the goods to the buyer destination some sample should be send to buyer air advanced this sample are called shipment sample.
6. **Approved Sample:** The sample which is approved by buyer.

Some information of sample section

Manpower:

Technician	: 01
Pattern Master	: 01
Quality Controller	: 01
Cutting Man	: 01
Skilled Operator	: 06
Cleaner	: 01
Utility Man	: 01

Equipment:

	4 Needle Flat Lock	: 02 set
3	Needle Flat Lock	: 02 set
4	Needle Over Lock	: 04 set
	Plain Machine	: 04 set

Elastic Attaching Machine : 01 set

Button Attaching Machine : 01 set

Cutting Table : 01 set

Vacuum Iron Table : 02 set

Marker making:

Marker is a thin paper where all parts of a Style drown by placing pattern by pencil and then it placed upon a lay and cut along the drawing line is called marker. The process of making a marker is called marker making. There are many types of method are use for marker but Hypoid Composite Knit used only manual method.

Point to be checked during marker making:

- Mismatched checked or stripe.
- Over Lapping.
- Parts missing.
- Pattern direction.
- Pattern alignment.
- Marker too wide then fabric.

Factor related to marker efficiency:

1. **Marker planner:** Marker depends on experience, honesty, sincerity, trial and technical knowledge. Higher the number of marker is the possibility of higher efficiency.
2. **Size of garments:** Higher the number of pattern size is the possibility of higher efficiency.
3. **Marker length:** Higher the marker length higher the efficiency. It can also help to increase the production capacity of cutting room.
4. **Fabric characteristics:** Systematical fabrics are those which are similar to all direction. Marker efficiency is good in this type of fabrics.

5. **Marker width:** The more the fabric width is easier to plan or make marker which will increase the efficiency.

Cutting Section

Flow chart of cutting section

Fabric Checking

↓

Fabric relaxation

↓

Fabric spreading

↓

Marker making

↓

Cutting

↓

Numbering by Sticker

↓

Bundling

↓

Deliver to the sewing section

Some information of cutting section

Manpower:

Cutting Manager : 01
Quality Controller : 04
Cutting Supervisor : 01
Marker Man : 01

Cutting Man : 02
Input Man : 02
Cutting Assistance : 20

Equipment:

Cutting Table : 02
Cutting Machine 12" : 04
Bend Knife : 01
Numbering Machine : 01

Cutting machine (Straight Knife):

Brand Name : MACK.
Country of Origin : Japan
Company : K. M. Cloth Cutting Machine CO. Ltd.
Volt : 220 V.
Model : KS- AU.
Quantity : 05 pcs.

Feature of Straight Knife:

- Possible to cut pattern pieces decertify from the fabric lay.
- Could be used to cut for higher depth of fabric.
- High Cutting speed.
- Sharp and heavy comers can be cut.
- Blade could be sharpened by attached grinding facilities.
- Blade could be sharpened by attached grinding facilities.
- Blade height 10 to 33 cm.

- Blade stroke 2.5cm to 4.5cm.

Spreading:

Spreading means the smooth laying of fabric in specific length and lay according to the buyer requirement. The cutting marker paper is laid in the top of the fabric layer. Generally number of the lay depends on the thickness of the fabric and the height of the fabric. There are different types of spreading method. But in Bangladesh the Straight method of spreading is used. In Straight method, every ply is placed according to the marker length.

Sewing Section

Flow chart of sewing section

Received bundle of different parts from cutting section

↓

Open the bundle

↓

Through it to the sewing

↓

Sewing the garments

↓

Finished the sewing

↓

In line inspection

↓

Send garments to the finishing section

Some information of sewing section

Manpower:

General Manager	: 01
Production Manager	: 01
Assist. Production Manager	: 01
Line Chief	: 05
Supervisor	: 10
Operator	: 110 Operator
Assistance	: 115
Iron Man	: 15
Store In-charge	: 01
Store Assistance	: 03

Equipment:

Plain Machine	: 95 set
4 Thread Over Lock	: 56 set

3 Needle Flat Lock : 42 set

4 Needle Flat Lock : 03 set

Auto controlled 1 Needle Lock stitch : 02 set

Elastic Attaching Machine : 03 set

Button Attaching Machine : 02 set

Button Hole machine : 02 set

Back Top Machine : 03 set

Bar Tack Machine : 02 set

2 Thread Over Edge for Butt and Sewing : 02 set

Knasai Special : 07 set

Dino Automatic Rib Cutter : 02 set UZU

Thread Sucking Machine : 01 set Oshima

Needle Detector : 01 set

Oshima Needle Inspection : 01 set

Heat Transfer Label Attaching Machine : 03 set

Snap Button Attaching Machine : 03 set

Viet Steam Iron : 15 set **Machine Details in Sewing unit of Hypoid Composite Knit Ltd.**

Machine	Brand Name	Country of Origin	Sets	Total Quantity
Plain Machine	Siruba	Japan	20	95
	Juki	Japan	62	

	Sunsir	Japan	13	
Over Lock Machine	Siruba	Japan	7	56
	Juki	Japan	44	
	Yamata	Japan	5	
Flat Lock cylinder Bed	Siruba	Japan	4	20
	Juki	Japan	13	
	Sunsir	Japan	3	
Flat Lock Flat Bed	Siruba	Japan	4	25
	Jiki	Japan	14	
	Yamata	Japan	3	
	Gemsey	Japan	4	
Back Tap Machine	Siruba	Japan	3	3
Kansai Special	Kansai	Japan	7	7
Button Attaching Machine	Siruba	Japan	1	2
	Jiki	Japan	1	

Button Hole Machine	Jiki	Japan	2	2
Snap Button Attaching Machine	GMC	China	3	3
Rib Cutter Machine	DINO	Taiwan	2	2

Bar Tack Machine	Jiki	Japan	2	2
Thread Sucking Machine	UZU	Thailand	1	1
Needle Detector Machine	Oshima	Taiwan	1	1
Fabric Inspection Machine	Oshima	Taiwan	1	1
Heat Transfer Label Attaching Machine			3	3

Definition of Needle:

Needle is used to sew the fabric. An appropriate sewing thread is feed into the needle to sew the fabric by needle. Needle make a hole in the fabric without any damage and make a needle thread loop and pass this loop through the loop of lopper thread to make bond to each other.

Name of Some needle that used in Hypoid Composite Knit Ltd.:

Machine Name	Needle used for Machine Wise	Needle Size
Plain Machine	DB	7, 9, 11, 14, 18, 21

Over Lock Machine	DC	7, 9, 11, 14
Flat Lock Machine	UY 128	7, 9, 11, 14, 16
Button Hole Machine	DP × 5	7, 11, 14, 16
Button Attaching Machine	TQ or DP × 14	9, 11, 14
Kansai Special	UO × 1	9, 11, 14

Some information of needle:

Company Name : Organ

Origin : Japan

Price : 10-25 Tk. (Per Needle).

Company Name : Grosebeker.

Origin : Japan.

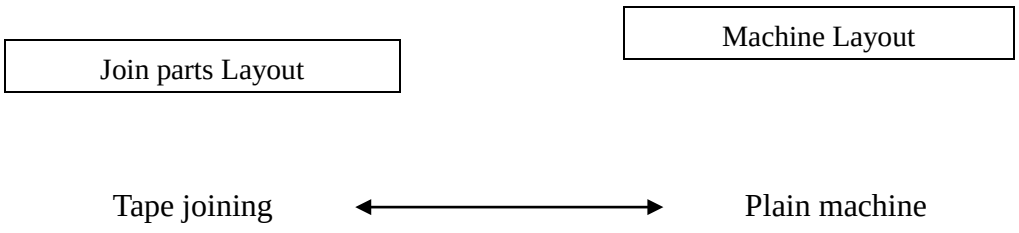
Price : 10-20 Tk. (Per Needle).

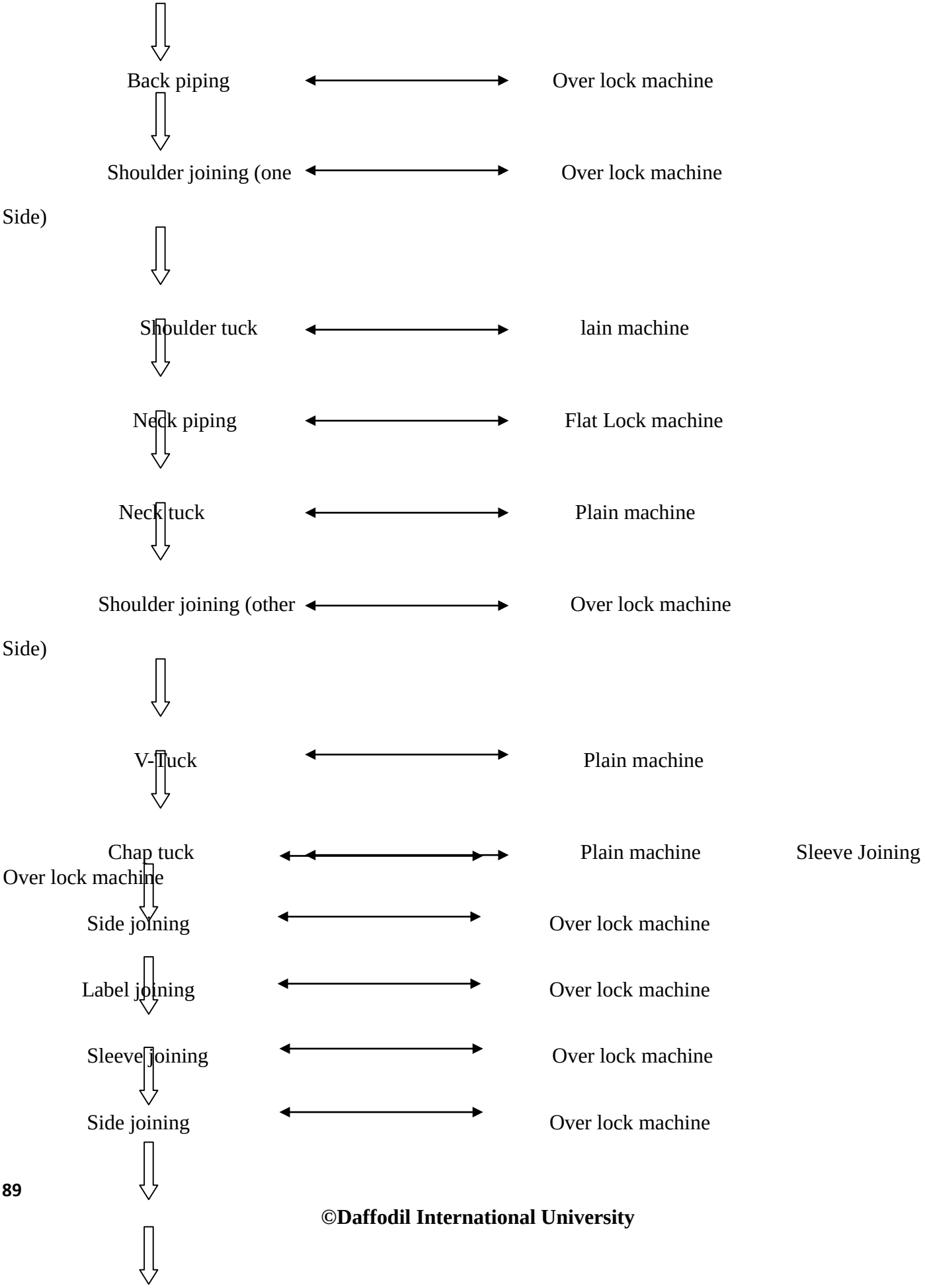
Broken Needle Policy:

1. All needles must be security stored.
2. Only authorized staff may distribute a new needle.
3. New needle only distribute upon exchange of a full broken needle.

4. When a needle breaks, search the whole area to locate all parts.
5. All needle parts to be attached or recorded on the needle control sheet.
6. If any parts of the broken needle cannot be found, the surrounding work must be removed and metal detected to locate the missing fragments.
7. If all parts cannot be found then these work pieces or bundles must be destroyed.
8. Records of all incidents must be kept and available for auditing.
9. Retain record sheet for 12 months.

Sewing Layout of a Women's T-Shirt



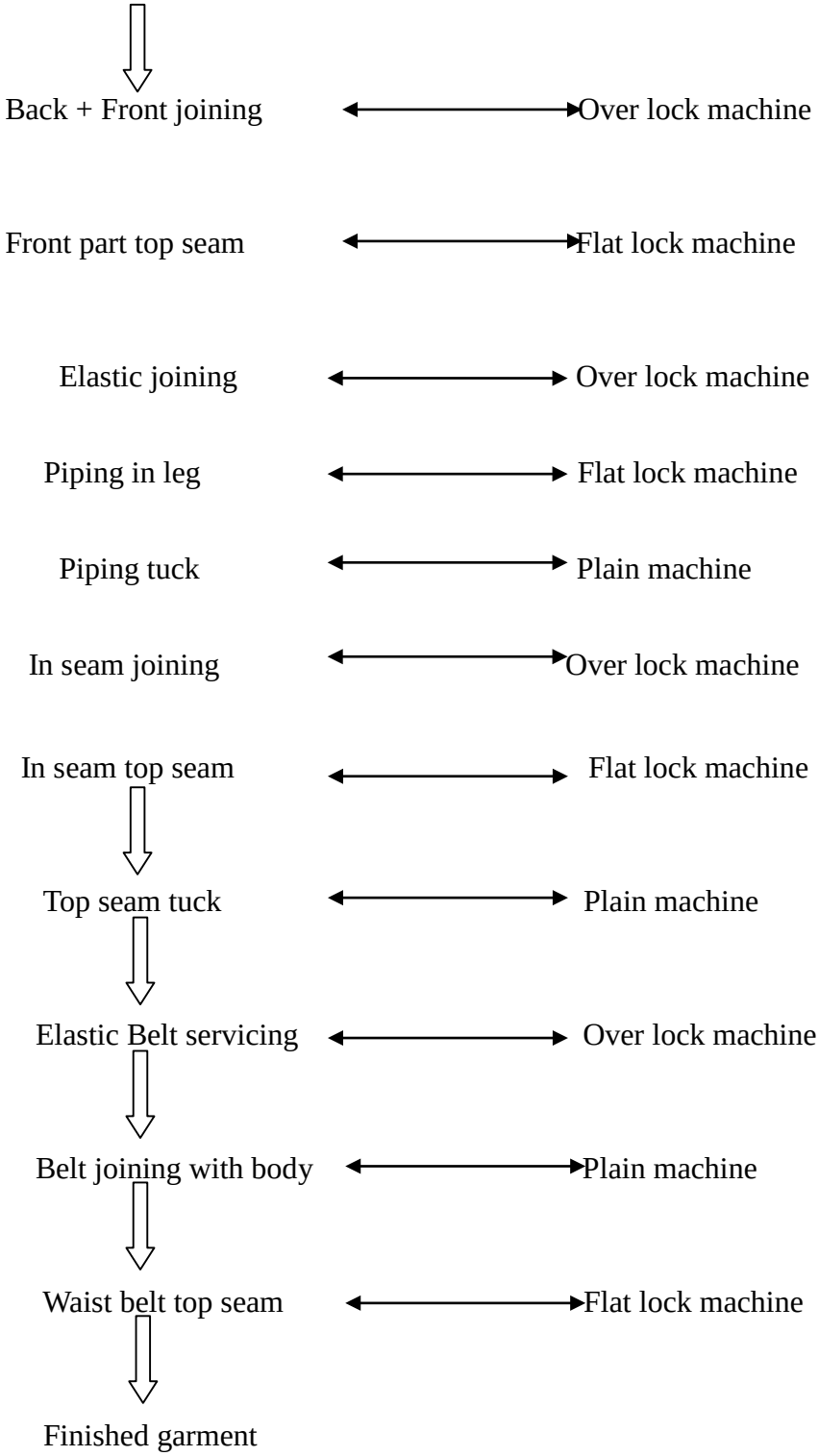


Label joining	⟷	Over lock machine
Sleeve hem	⟷	Flat lock machine
Bottom hem	⟷	Flat lock machine
Tuck stitch	⟷	Plain machine

Finished garment

Sewing Layout of a Under Wear

Join Parts Layout		Machine Layout
Heat set mark		
⇩		
Heat set Label attaching	⟷	Heat transfer label attaching machine
⇩		
Front part piping	⟷	Flat lock machine
⇩		
Piping Tuck	⟷	Plain machine
⇩		
⇩		



Time Study for the women's T-shirt in Hypoid Composite Knit Ltd.:

Join Parts Name	No. of Machine	Production Per Hour
Tape joining	1	200
Back piping (Neck)	1	250
Shoulder joining (One side)	1	250
Shoulder tuck	1	300
Neck piping	1	200
Neck Tuck	1	300
Shoulder joining(other side)	1	200
V-Tuck	1	300
Chap tuck	1	200
Sleeve joining	2	100
Label Joining	3	250

Side joining	3	240
Sleeve hem	2	240
Bottom hem	1	200
Tuck stitch	2	300

Figure: Sampling Section

Figure: Spreading Process

Figure: Sewing Floor

Figure: Cutting Process

Figure: Heat Transfer label Attaching Machine.

Chapter-07

Finishing & Packing Section

Finishing Section

Flow chart of finishing section

Ironing

Final quality inspection

Measurement check

Size wise separating

Hang tagging

Folding

Poly bagging

Metal detecting

Packing or Hanger setting

Send to delivery section

Some Information of finishing section:

No. o Iron table : 14

No. of inspection table : 11

No. of final inspection table : 06

No. of folding and packing table : 08

Manpower in Finishing Section:

Finishing In-Charge : 01

Supervisor : 02

Iron Man : 14

Folding Man : 10

Packing Man : 04

Quality Inspector : 20

Chemicals used to remove spot from garments in finishing section:

1. Dyeing Spot : Lifter
2. Cutting Spot : Thinner
3. Printing Spot : Thinner
4. Oil Spot : Thinner or Power
5. Sewing Spot : Lifter

Thinner:

Thinner is used to remove the soil spot, color spot, dust and dirty spot, etc.

Lifter:

Lifter is used to remove the oil spot, soil spot, sewing spot etc.

Water:

Water is used to remove the dirty spot, ink color, etc.

Packing Section

Flow chart of packing section

Received garments from the finished section

↓

Hang tagging

↓

Folding with inserting back board, tissue

↓

Poly Bagging

↓

Cartooning

↓

Applied adhesive tape on the pack

↓

Bar-coding

↓

Packing complete

Cartoon:

Generally there are three types of cartoon. They are,

1. **Depend on Stitching:**
   - Stitching Carton.
   - Non-Stitching Carton.
2. **Depend on ply:** ○ 3 Ply Carton ○ 5 ply Carton ○ 7 ply Caron
3. **Depend on Size:** ○ Master Carton.
   - Inner Carton.

Carton Measurement:

If Length, Width, Height is in cm, then

$$\text{Rule 1 (Without Wastage)} = \frac{(L+W) \times (W+H) \times 2}{100 \times 100} \text{ m}^2$$

$$\text{Rule 1 (Include Wastage)} = \frac{(L + W + 6) \times (W+H+4) \times 2}{100 \times 100} \text{ m}^2$$

$$\text{Price per Square Meter} = \frac{(L+W) \times (W+H) \times 2}{100 \times 100} \times \text{Rate per } m^2$$

= Rate per pcs.

Information that mentioned on the carton:

Buyer Name : NTD Apparel.

Order No. : 1001407

Design No. : 256LF.

Style : AR345 QTY

: 50 pcs.

Destination : Canada.

Size / Color	S	M	L	XL	XXL	Total Pieces
Placed Blue	2	7	8	6	2	25
Terracotta	2	7	8	6	2	25

Total	4	17	16	12	4	50

Net Wt. : 2.5 kg.

LAYOUT PLAN OF QUALITY ASSURANCE:

Garments Division

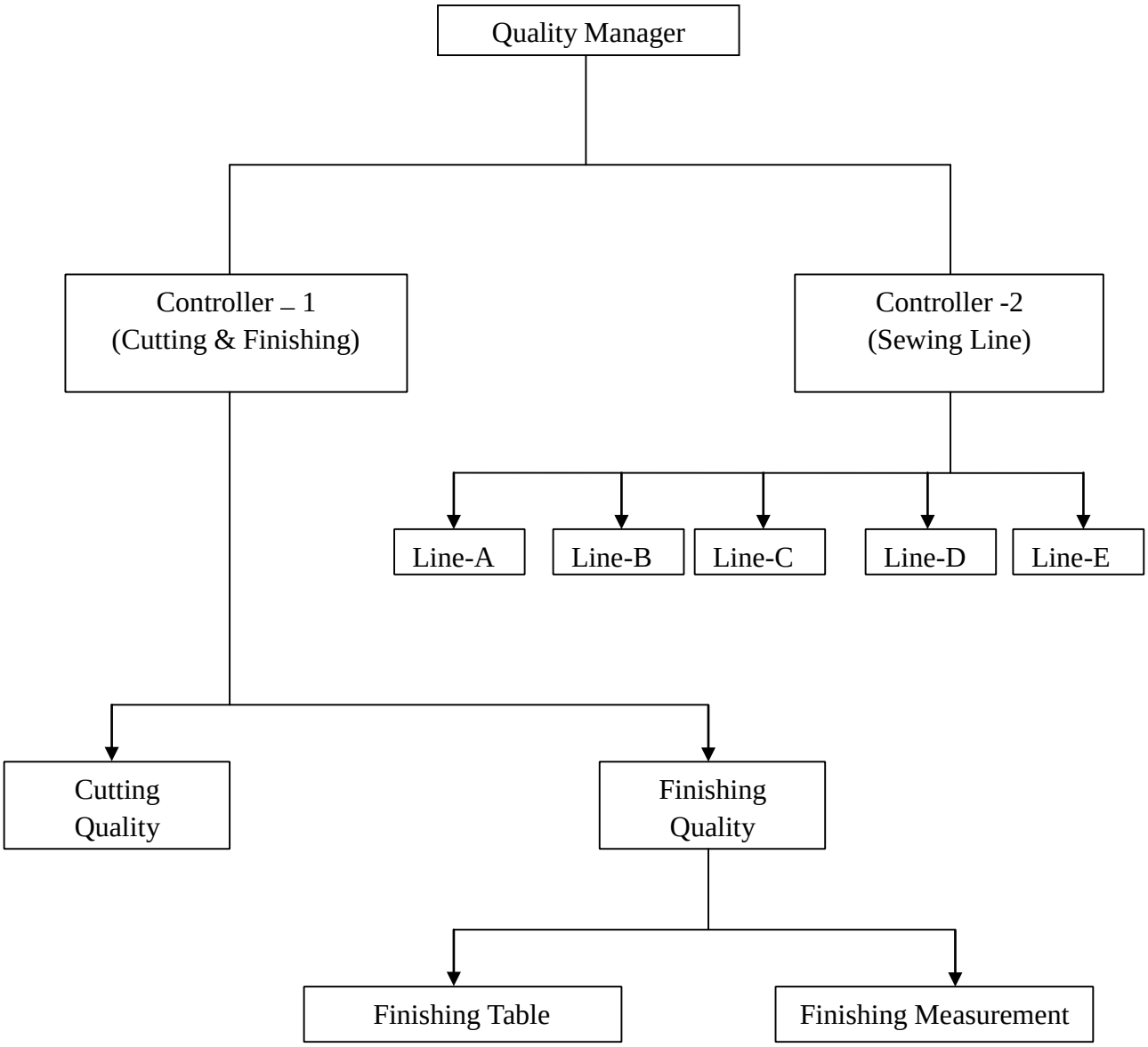


Figure: Ironing Section

Figure: Thread Sucking Machine

Figure: Spot Removing Room

Figure: Quality Room

Figure: Folding Room

Figure: Packing Room

Chapter-09

Some Necessary Machine

Other different types of machine that used in Hypoid Composite Knit Ltd.:

Boiler:

No. of Boiler : 01

Company Name : HURST Boiler & Welding Co. Ltd.

Country of origin : USA

Model : CM-10A-G-30

Volts : 220V.

Frequency : 50 Hz.

Pressure : 6.5 Kg/cm² (PSI).

Generator:

No. of Generator : 03

Company Name : Cummins India Ltd.

Country of origin : India.

Brand : Jakson.

Frequency : 50 Hz.

RPM : 1500

Volt : 400V

Power : 380 KVA.

Compressor:

No. of Compressor : 02

Company Name : Worthington Creyssensac Co. Ltd.

Brand : ROLLAIR 25.

Country of origin : France.

Figure: Gas Generator

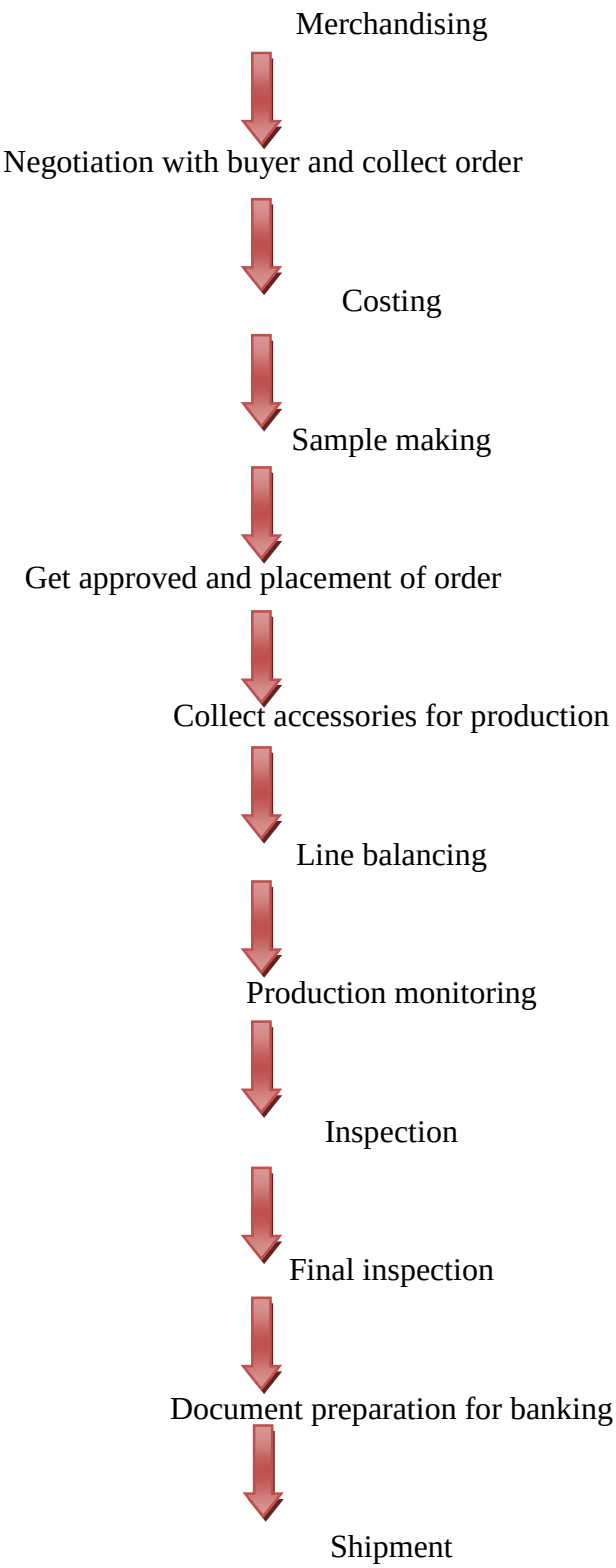
Figure: Boiler

Chapter-09

Merchandising Section

Merchandising Section

Flow chart of merchandising section



Definition of Merchandiser:

Merchandising refers to the technique used to sell or buy the product. A merchandiser is someone who purchases a product from the manufacturer, and then sells it to buyer. There are numerous techniques that a merchandiser may used to convince buyer to buy the products.

The term merchandising is related with trade, which means buying and selling the products. The person who is involved with the trade he/she is called merchandiser. The activities of a merchandiser are known as merchandising.

Activities or responsibilities of a merchandiser:

- Sample development.
- Price negotiation.
- Order confirmation.
- L/C opening.
- Sourcing.
- Material collection.
- Production planning.
- Production monitoring.
- Quality assurance.
- Arrange final inspection.
- Arrange shipment

Qualities of a Good merchandiser

- Language skill.
- Computer skill.
- Marketing skill.
- Consumption knowledge of the product.
- Order getting ability.
- Costing knowledge of raw material.
- Sincere and responsible. ❖ Hard worker.

L/C (Latter of credit):

There are different types of later of credit (L/C) are available in business system. They are,

1.Master L/C.
2.Back to Back L/C.
3.Revocable L/C.
4.Irrevocable L/C.
5.Sight L/C.

Fabric consumption calculation for Men's T-shirt:

No.	Parts			
01	Chest			
02	HPS			
03	Sleeve Length			
04	Arm hole			
05	Neck			
06	Neck width			

For Body:

$$CDP = \frac{\text{Length} \times \text{Width} \times 12\ \text{Pcs} \times \text{GSM}}{10000000}$$

$$118 \times 78 \times 12 \times 160$$

$$= \frac{\text{Length} \times \text{width} \times 12 \text{ pcs} \times \text{GSM} \times 2 \text{ part}}{10000000}$$

$$= 1.78 \text{ Kg.}$$

For Sleeve:

$$\text{CPD} = \frac{\text{Length} \times \text{width} \times 12 \text{ pcs} \times \text{GSM} \times 2 \text{ part}}{10000000} =$$

0.49 Kg.

For Neck:

$$\text{CPD} = \frac{\text{Length} \times \text{Width} \times 12 \text{ pcs} \times \text{GSM}}{10000000}$$

$$= \frac{58 \times 5 \times 12 \times 200}{}$$

10000000

= 0.07 Kg.

Total Consumption = Body + Sleeve + Neck + 5% Wastage

= 1.76 + 0.49 + 0.07 + 0.05

= 2.37 Kg/ dozs

Conclusion:

There is large difference between the theoretical knowledge and practical experiences. This is truer in case of the study of Textile Technology. Industrial attachment or, Industrial training is an essential part for textile education because it maximizes the gap between theoretical and practical

knowledge. This Industrial training increase our through a lot about textile technology. It also helps us to know a lot about industrial production process, machineries, and industrial management and made us suitable for industrial life. Besides it gives us the first opportunity to work in industry. So, we can say industrial attachment prepare us for the expected destiny of practical life.